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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,827	01/04/2002	Upendra V. Chaudhari	YOR920010539US1(590.076)	7326

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FERENCE & ASSOCIATES LLC
409 BROAD STREET
PITTSBURGH, PA 15143

EXAMINER	
PIERRE, MYRIAM	

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
06/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/042,827	CHAUDHARI ET AL.	
	Examiner	Art Unit	
	Myriam Pierre	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *121* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 11, filed01/03/07, with respect to the rejection(s) of claim(s) 1-21 under Passera (6,272,449) in view of Kuhn et al. (6,343,267) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Gao et al. (6,073,096).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Gao et al. (6,073,096).

As to claims 1, 11 and 21, Gao teaches,

an arrangement for obtaining speech and audio data as input data (acoustic information and speech, col. 5lines 1-5 and lines 59-60); and

creating a predetermined number of non-overlapping subsets by splitting the input data recursively (col. 9 lines 50-60; clustering is done until the testing brings each cluster system closer to the testing speaker, thus an inherent recursive process).

said clustering being independent of any model wherein the splitting of the input data into predetermined number of non-overlapping subsets occurs independent of a model (col. 9 lines 60-67; independent model is for new speakers).

wherein there is no variability in the clustering due to randomness (col. 9 lines 50-60; clustering is done until the testing brings each cluster system closer to the testing speaker, hence avoiding randomness in clustering a speaker into section that is unlike the test speaker).

As to claims 2 and 12, which depend on claims 1 and 11, Gao teaches,

initially splitting the input data into at least two sets of output data (Fig. 3 elements 24).

As to claims 3 and 13, which depend on claims 2 and 12, Gao teaches,

splitting the at least two sets of output data recursively (col. 9 lines 50-60; clustering is done until the testing brings each cluster system closer to the testing speaker, thus an inherent recursive process and Fig. 3); and

repeating the recursive splitting of output data sets until predetermined number of non-overlapping subsets is obtained (Fig. 3 and col. 9 lines 50-60; clustering is done until the testing brings each cluster system closer to the testing speaker, thus an inherent recursive process).

4. Claims 4-10 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao (6,272,449) in view of Kuhn et al. (6,343,267).

As to claims 4 and 14, which depend on claims 2 and 12, Gao does not explicitly teach an eigenvector decomposition relating to the input data.

However, Kuhn et al. do teach determining an eigenvector decomposition relating to the input data (eigenvectors generated from speakers, col. 7, lines 8-9).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Gao's model into Kuhn et al.'s eigenvector decomposition via data clustering because Kuhn et al. teach that this would improve speed and efficiency at which speaker and environment adaptation is performed, col. 1, lines 39-40 and 45, 50-59.

As to claims 5 and 15, which depend on claims 4 and 14, Gao teaches,

creating a predetermined number of non-overlapping subsets (col. 4, lines 59-61).

Gao does not explicitly teach determining eigenvector projections.

However, Kuhn et al. do teach

adapted to determine vector projection coefficients (coefficients, col. 7, line 64) onto the set of eigenvectors ("eigenvector", col. 8, line 52 and col. 2, line 34) in the eigenvector decomposition ("eigentransformation vectors", col. 16, line 35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Gao's data subsets into Kuhn et al.'s eigenvector projection, because Kuhn et al. teach that this would improve speed and efficiency at which speaker and environment adaptation is performed, col. 2, lines 16-19.

As to claim 6 and 16, which depend on claims 5 and 15, Gao does not explicitly teach the recited probability density.

However, Kuhn et al. do teach determining a probability distribution for the vector of projection coefficients (probability density for vector...from coefficient, col. 5, lines 30-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Gao's data subsets into Kuhn et al.'s predetermine subset model for determining probability density because Kuhn et al. teach that this will improve speed and efficiency at which speaker and environment adaptation is performed, col. 1, lines 39-40, 61-62 and col. 2, lines 16-19.

As to claim 7 and 17, which depend on claims 6 and 16, Gao teaches,

yield the at least two sets of output data based on their relation to the threshold ("threshold value", col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4 $subspace_{1-2}$).

Gao does not explicitly teach of relating the threshold to a probability distribution value.

However, Kuhn et al. teach maximum likelihood involving probability density (col. 5, lines 30-31 and col. 10, lines 31-33); and

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Gao's data subsets into et al.'s assign threshold values based on probability density for clustering accuracy because Kuhn et al. teach that this would provide the probability distribution function description of the plurality of parameters based on observed data from speakers, thus weights the data which is informative, col. 5, line 24, 29 and col. 8, lines 60-62.

As to claims 8 and 18, which depend on claims 7 and 17, Gao teaches,

teaches inherent N-1 threshold values ("threshold value", col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4 $subspace_{1-2}$).

As to claim 9 and 19, which depend on claims 8 and 18, Gao teaches

the threshold is a value of the function relating to the projection coefficients for which the probability distribution function equals m/N, where m is a number from 1 to N-1 (col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4 $subspace_{1-2}$; the equal probabilities of correct clustering, one needs to set an equal probability threshold, for 2 clusters setting it to ½, for 3 clusters to 1/3, etc).

As to claim 10 and 20, which depends on claim 1, Gao teaches,

wherein data clustering relates to the enrollment of target speakers in a speaker verification system (col. 5 lines 30-35).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure please see attached PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myriam Pierre whose telephone number is 571-272-7611. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost can be reached on 571-272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Myriam Pierre
AU 2626
05/11/07

DWAYNE BOST
SUPERVISORY PATENT EXAMINER